

CLAIMS

1. A method of operating a path computation element, said method comprising:

5 determining that a fragmented bandwidth condition exists in a network; and
in response to said fragmented bandwidth condition, causing rerouting of MPLS Traffic Engineering paths to increase likelihood of successful placements.

2. The method of claim 1 wherein causing rerouting comprises:

10 distributing a reoptimization request to a plurality of nodes within said network.

3. The method of claim 2 wherein causing rerouting further comprises:

receiving requests for reoptimization of paths until a timer expires; thereafter
recomputing said paths in response to said requests.

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4. The method of claim 3 wherein recomputing comprises:

recomputing employing a virtual shortest path tree technique.

5. The method of claim 3 wherein recomputing comprises:

recomputing said paths in order of decreasing bandwidth requirements.

5 6. The method of claim 1 wherein determining comprises:

monitoring a failure rate in establishing paths; and

comparing results of said monitoring to a failure rate criterion.

7. A method of operating a path computation element to increase the likelihood

10 of successful path placements, said method comprising:

distributing a reoptimization request to a plurality of nodes within said network;

receiving requests for reoptimization of paths until a timer expires; and thereafter

recomputing said paths in response to said requests.

15 8. The method of claim 7 wherein recomputing comprises:

recomputing employing a virtual shortest path tree technique.

9. The method of claim 7 wherein recomputing comprises:

recomputing said paths in order of decreasing bandwidth requirements.

5 10. A computer program product for operating a path computation element,
said computer program product comprising:

code that causes a determination that a fragmented bandwidth condition exists in a
network;

code that, in response to said fragmented bandwidth condition, causes rerouting of
10 MPLS Traffic Engineering paths to increase likelihood of successful placements; and
a computer-readable medium that holds the codes.

11. The computer program product of claim 10 wherein said code that causes
rerouting comprises:

code that causes distribution of a reoptimization request to a plurality of nodes
15 within said network.

12. The computer program product of claim 11 wherein said code that causes
rerouting further comprises:

code that causes receipt of requests for reoptimization of paths until a timer expires; and

code that causes recomputation of said paths in response to said requests.

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13. The computer program product of claim 12 wherein said code that causes recomputation of said paths comprises:

code that causes recomputation of said paths by employing a virtual shortest path tree technique.

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14. The computer program product of claim 13 wherein said code that causes recomputation comprises:

code that causes recomputation of said paths in order of decreasing bandwidth requirements.

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15. The computer program product of claim 10 wherein said code that causes determination of a fragmented bandwidth condition comprises:

code that causes monitoring of a failure rate in establishing paths; and

code that causes comparison of results of said monitoring to a failure rate criterion.

5 16. A computer program product for operating a path computation element to increase the likelihood of successful path placements, said computer program product comprising:

code that causes distribution of a reoptimization request to a plurality of nodes within said network;

10 code that causes reception of requests for reoptimization of paths until a timer expires;

code that causes recomputation of said paths in response to said requests; and

a computer-readable medium that holds the codes.

15 17. The computer program product of claim 16 wherein said code that causes recomputation of paths comprises:

code that causes recomputation employing a virtual shortest path tree technique.

18. The computer program product of claim 16 wherein said code that causes recomputation comprises:

code that causes recomputation of said paths in order of decreasing bandwidth
5 requirements.

19. Apparatus for operating a path computation element, said apparatus comprising:

a processor;

10 a memory device that stores instructions for execution by said processor, said instructions comprising:

code that causes a determination that a fragmented bandwidth condition exists in a network; and

code that, in response to said fragmented bandwidth condition, causes
15 rerouting of MPLS Traffic Engineering paths to increase likelihood of successful placements.

20. Apparatus for operating a path computation element to increase the likelihood of successful path placements, said apparatus comprising:

a processor;

a memory device that stores instructions for execution by said processor, said instructions comprising:

5 code that causes distribution of a reoptimization request to a plurality of nodes within said network;

 code that causes reception of requests for reoptimization of paths until a timer expires; and

 code that causes recomputation of said paths in response to said requests.

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21. Apparatus for operating a path computation element, said method comprising:

 means for determining that a fragmented bandwidth condition exists in a network; and

15 means for, in response to said fragmented bandwidth condition, causing rerouting of MPLS Traffic Engineering paths to increase likelihood of successful placements.

22. Apparatus for operating a path computation element to increase the likelihood of successful path placements, said apparatus comprising:

means for distributing a reoptimization request to a plurality of nodes within said
5 network;

means for receiving requests for reoptimization of paths until a timer expires; and
thereafter

means for recomputing said paths in response to said requests.